

Amendments To The Drawings

The attached sheet of drawings includes changes to Fig. 1. This sheet, which includes Fig. 1, replaces the original sheet including Fig. 1. In Figure 1, change CNIL in element 120 to CNTL.

Attachment: Replacement Sheet
Annotated Sheet Showing Changes

REMARKS

The Office Action dated June 22, 2005 in this Application has been carefully considered. Claims 17, 18, 20-38, and 47 are pending. The above amendments and the following remarks are presented in a sincere attempt to place this Application in condition for allowance. Claim 17 has been amended in this response. Reconsideration and allowance are respectfully requested in light of the above amendments and following remarks for those Claims not previously determined to be in condition for allowance.

Applicant wishes to thank the Examiner for the courtesy of the interview conducted on September 6, 2005. During the interview, the following remarks were discussed.

Claims 17, 18, 20, and 21 stand rejected under 35 U.S.C. §103(a) by U.S. Patent No. 6,597,249 by Chien et al. (“Chien”) in view of U.S. Patent No. 6,512,419 by Adams et al. (“Adams”). Insofar as it may be applied against the Claims, this rejection is overcome.

Regarding Claims 17 and 21, Chien was cited as assertedly fully disclosing the following: a method for testing a phase locked loop (PLL) having a phase frequency detector (PFD) and a voltage controlled oscillator (VCO) receiving input from the PFD, and at least one divider receiving input from the VCO comprising: disabling the PFD; applying a plurality of test input voltages to the VCO and measuring output frequencies of the VCO as a function of the test input voltages; determining lock/capture range of the PLL based on the measured output frequencies of the VCO as a function of the test voltages; and a frequency measuring module for measuring VCO output frequency via the at least one divider and test clock outputs. *See* Office Action, page 2. The Examiner noted that Chien does not disclose wherein a minimum and a maximum frequency are measured from the VCO, and the lock and capture ranges are determined based on the measured minimum and maximum frequency. *See* Office Action, page 3.

Adams was cited as assertedly fully disclosing the following: wherein a minimum and a maximum frequency are measured from the VCO, and the lock range of the PLL is determined based on the measured minimum and maximum frequencies. *See* Office Action, page 3. The Examiner further stated that it would have been obvious to combine the teachings of Chien and Adams “in order to keep the system running efficiently.” Office Action, page 3.

Applicants respectfully traverse the Examiner’s arguments and submit that there is no motivation to combine the teachings of Chien and Adams as applied to the pending Claims. In particular, both Chien and Adams teach away from the Examiner’s proposed combination. Furthermore, even if there were motivation to combine Chien and Adams, the proposed combination fails to disclose each and every element of Claim 21 and amended Claim 17.

First, Chien expressly teaches away from the Examiner’s proposed combination. In particular, Chien states, “[d]uring the coarse tuning, the initial control voltage sets the VCO to generate a frequency in the middle of the frequency range of interest.” Chien, col. 2, lines 30-32. Specifically, “[b]efore coarse tuning starts, digital input VCO_DIN of the VCO 15 is set at a value in the mid frequency of tuning range. . .” Chien, col. 3, lines 56-58. “After the digitally controlled coarse tuning, the analog phase-locked loop is closed to fine tune the VCO as in a conventional synthesizer.” Chien, col. 2, lines 44-46.

The Examiner proposes Adams as teaching wherein a minimum and a maximum frequency are measured from the VCO, and the lock range of the PLL is determined based on the measured minimum and maximum frequencies. *See* Office Action, page 3. Chien, however, expressly teaches initially setting the VCO control voltage to result in a frequency in the middle of the minimum and maximum frequencies, as shown above. Thus, Chien expressly teaches away from the Examiner’s proposed combination of Chien and Adams. Accordingly, there is no motivation in

Chien to combine Chien with Adams for “measuring a minimum and a maximum output frequency” as recited by independent Claim 21 and amended Claim 17.

Therefore, for at least this reason, Applicants respectfully request that the rejection of Claims 17 and 21 under 35 U.S.C. § 103(a) be withdrawn and that Claims 17 and 21 be allowed.

Furthermore, the motivation lacking in Chien is not found in Adams. Indeed, Adams teaches a fundamentally different approach to coarse tuning than does Chien, thus teaching away from any combination with Chien. In particular, Chien teaches, generally, “[t]he coarse-tuning is provided by means of binary search without closing the feedback loop.” Chien, col. 2, lines 35-37. Adams, however, generally teaches “A VCO calibration procedure therefore includes switching the VCO to each of its ranges set by a bank of fixed capacitors, and using the replica charge pump to drive the VCO to its minimum and maximum frequency for each range frequency.” Adams, col. 2, lines 15-19. Thus, Adams, as well as Chien, teaches away from the Examiner’s proposed combination with Chien.

Accordingly, there is no motivation to combine Chien with Adams for “measuring a minimum and a maximum output frequency” as recited by independent Claims 17 and 21. The lack of any suggestion or motivation to combine the teachings of Chien and Adams is fatal to any conclusion that their combination would be “obvious.” Therefore, for at least this reason, Applicants respectfully request that the rejection of Claims 17 and 21 under 35 U.S.C. § 103(a) be withdrawn and that Claims 17 and 21 be allowed.

Still further, the Examiner cites Chien as disclosing “a frequency measuring module for measuring VCO output frequency via the at least one divider.” Office Action, page 2. However, Chien expressly states that “[t]he coarse tuning is accomplished without frequency division and comparison in a closed feedback loop.” Chien, col. 2, lines 27-29. And, “the coarse tuning is

accomplished without closing a phase-locked loop using a phase detector, a frequency divider and a loop filter as shown in FIG. 4.” Chien, col. 4, lines 5-7.

Claim 21 recites “measuring a minimum and a maximum VCO output frequency via the at least one divider.” Claim 17 has been amended to include a distinguishing feature of the present invention. The limitation, “measuring a minimum and a maximum output frequency of the VCO via the at least one divider” has been added to Claim 17. Support for this Amendment can be found, among other places, at page 10, lines 12-16, of the original Application.

Thus, even if there were motivation to combine Chien and Adams, which there is not, the proposed combination expressly teaches away from a “a frequency measuring module for measuring a minimum and a maximum VCO output frequency via the at least one divider and test clock outputs” as recited by independent Claim 21 and amended Claim 17. Accordingly, for at least this reason, Applicants respectfully request that the rejection of Claims 17 and 21 under 35 U.S.C. § 103(a) be withdrawn and that Claims 17 and 21 be allowed.

In view of the foregoing, it is apparent that the cited references and proposed combination do not disclose, teach or suggest the unique combinations recited in Claims 17 and 21. Applicants therefore submit that Claims 17 and 21 are clearly and precisely distinguishable over the cited references in a patentable sense, and are therefore allowable over these reference and the remaining references of record. Accordingly, Applicants respectfully request that the rejection of Claims 17 and 21 under 35 U.S.C. § 103(a) be withdrawn and that Claims 17 and 21 be allowed.

Claims 18 and 20 depend upon and further limit amended Claim 17. Hence, for at least the aforementioned reasons, these Claims should be deemed to be in condition for allowance. Applicants respectfully request that the rejections of dependent Claims 18 and 20 also be withdrawn.

Claims 22-24, 29-32 and 37 stand rejected under 35 U.S.C. § 103(a) in view of Chien and Adams and U.S. Publication 2003/0071748 to Huang (“Huang”). Insofar as these rejections may be applied against the pending Claims, they are deemed overcome. Claims 22-24, 29-32, and 37 depend upon and further limit Claim 21. Hence, for at least the aforementioned reasons, these Claims should be deemed to be in condition for allowance. Applicants respectfully request that the rejections of dependent Claims 22-24, 29-32, and 37 also be withdrawn.

Claims 25-28 and 33-36 stand rejected under 35 U.S.C. § 103(a) in view of Chien, Adams, Huang, and U.S. Patent 6,492,798 to Sunter (“Sunter”). Insofar as these rejections may be applied against the pending Claims, they are deemed overcome. Claims 25-28 and 33-36 depend upon and further limit Claim 21. Hence, for at least the aforementioned reasons, these Claims should be deemed to be in condition for allowance. Applicants respectfully request that the rejections of dependent Claims 25-28 and 33-36 also be withdrawn.

Claim 38 stands rejected under 35 U.S.C. § 103(a) in view of Chien, Adams, Huang, and U.S. Patent 4,851,712 to Imai (“Imai”). Insofar as this rejection may be applied against the pending Claims, it is deemed overcome. Claim 38 depends upon and further limits Claim 21. Hence, for at least the aforementioned reasons, this Claim should be deemed to be in condition for allowance. Applicants respectfully request that the rejection of dependent Claim 38 also be withdrawn.

Applicants respectfully note that the basis for rejection of Claim 47 is unclear. Based on the Examiner’s remarks, “[i]n regard to claims 22-24, 30-32, 37, and 47, Chien et al. as modified by Adams et al. discloses all that is disclosed above in the rejection of claim 21,” Applicants assume that the Examiner’s basis for rejection of Claim 47 is the same as that for Claims 22-24, 29-32 and 37 as recited in paragraph 6 of the Office Action. *See* Office Action, page 4.

Applicants contend that the rejection of Claim 47 is overcome for at least some of the reasons that the rejections of Claims 17 and 21 and Claims 22-24, 30-32, and 37 are overcome. These reasons include the proposed combination not disclosing, teaching, or suggesting "a frequency measuring module for measuring a minimum and a maximum VCO output frequency via the at least one divider and test clock outputs." Applicants therefore respectfully submit that Claim 47 is clearly and precisely distinguishable over the cited references in any combination.

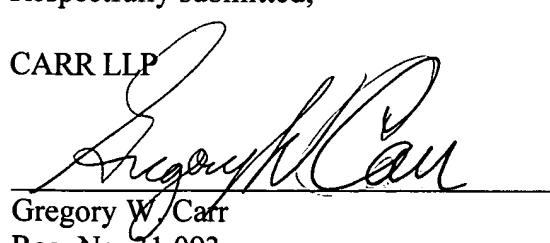
Applicants have now made an earnest attempt to place this Application in condition for allowance. For the foregoing reasons and for other reasons clearly apparent, Applicants respectfully request full allowance of Claims 17-18, 20-38 and 47.

Applicant does not believe that any fees are due; however, in the event that any fees are due, the Commissioner is hereby authorized to charge any required fees due (other than issue fees), and to credit any overpayment made, in connection with the filing of this paper to Deposit Account No. 50-0605 of CARR LLP.

Should the Examiner deem that any further amendment is desirable to place this application in condition for allowance, the Examiner is invited to telephone the undersigned at the number listed below.

Respectfully submitted,

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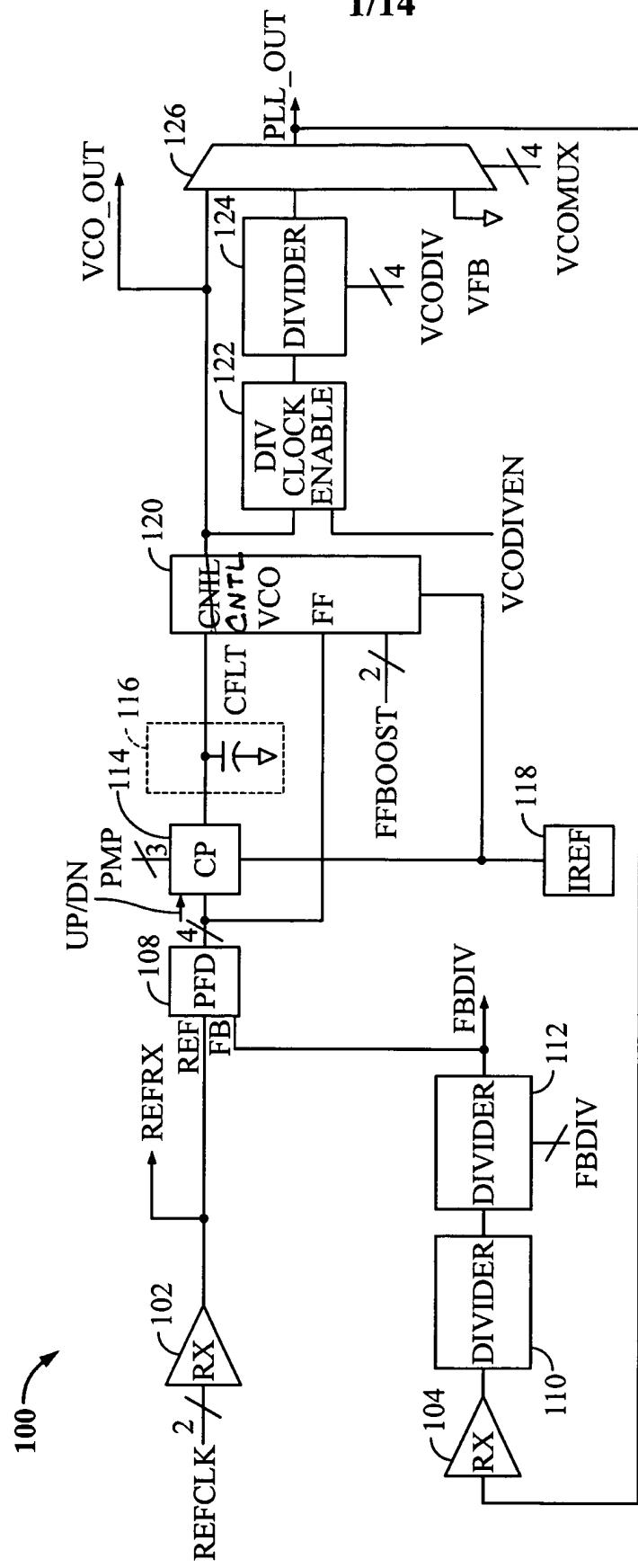


FIG. 1